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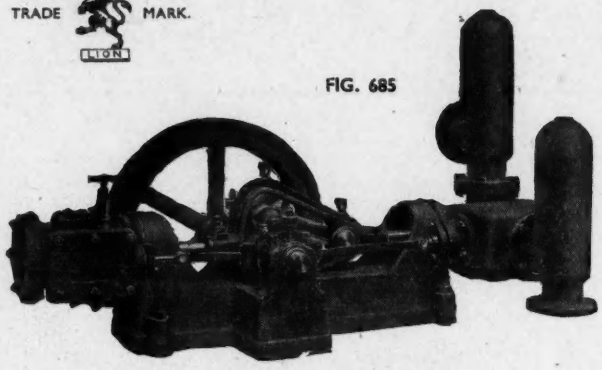

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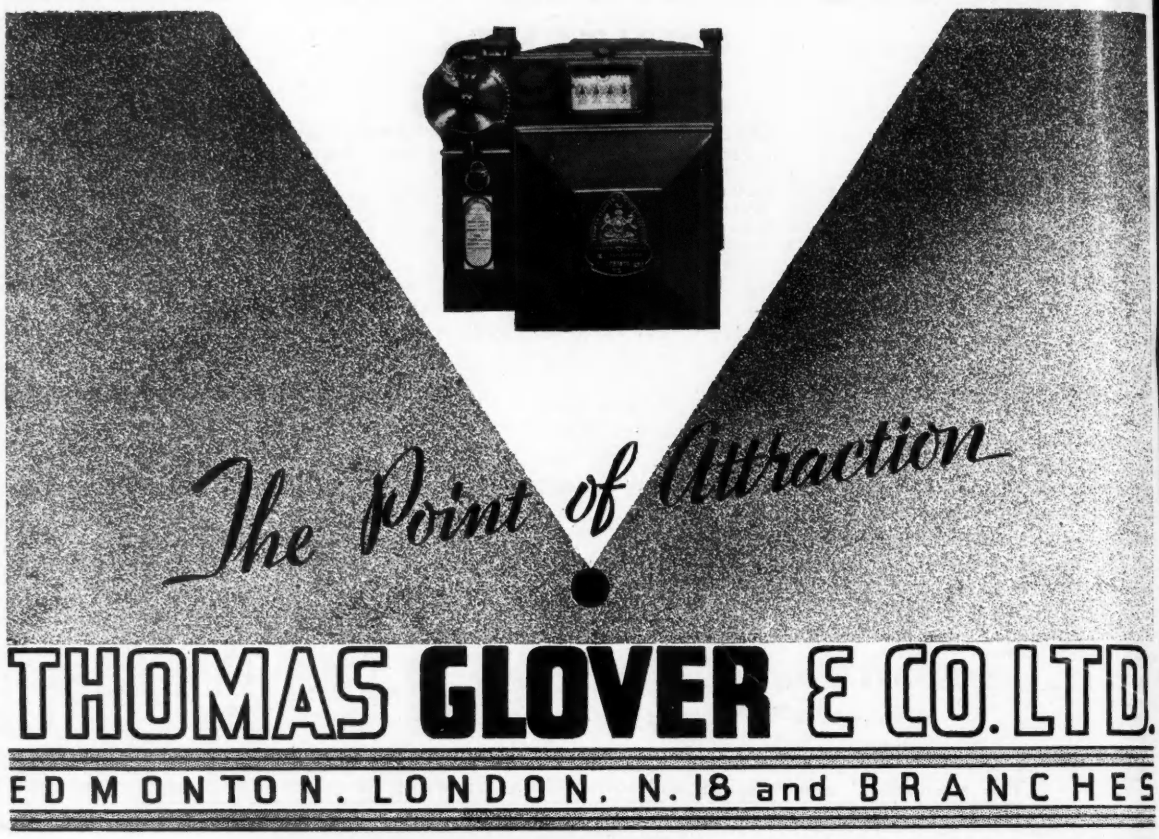

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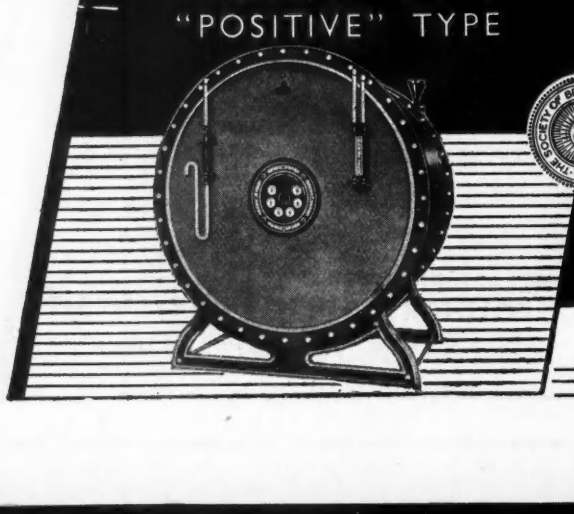

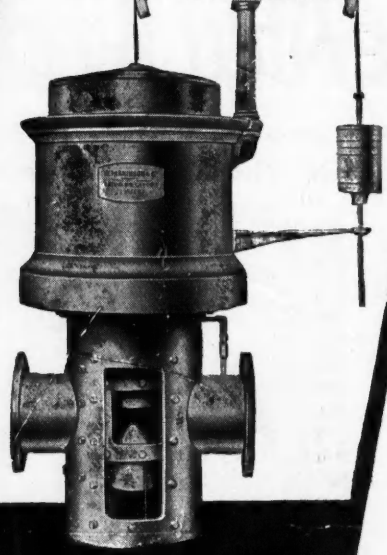

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GAS JOURNAL, APRIL 21, 1943

VOL. 241 95th YEAR No. 4170

EDITORIAL NOTES

SIR DAVID MILNE-WATSON

IT will be a matter for very great regret in circles extending far beyond the confines of the Gas Industry that ill-health has compelled the resignation of Sir David from the more active part of his work on behalf of the Industry as a whole. The announcement is made elsewhere in this issue with that economy of words and comment which has for so long characterized the dealings of the National Gas Council with the Press and, as we have so often pointed out, has largely frustrated our natural desire to foster a sense of unity in the Industry and to assist in the framing of a generally acceptable policy. But although Sir David has given up the Presidency of the Council and the Chairmanship of the Central Executive Board, he remains, so far as we know, Governor of the world's greatest gas supply undertaking; moreover, men of his stature, when they retire from active participation in whatever sphere of politics, have thrust upon them whether they desire it or not the honourable role of "elder statesman." And so, taking one consideration with another, we believe this is not an occasion to attempt any appraisement of Sir David's services to the Gas Industry; we look for many more to come from one who is mentally still so active. In fact the general hope will be that his reluctant deference to doctor's orders may prove the sure means of conserving his physical strength and restoring him quickly to health, so that his undoubted statesmanship can be devoted, in a position removed from the minor controversies connected with the holding of office, to further guidance of the Industry in stressful days ahead.

Nevertheless, however dispassionately we may try to contemplate Sir David's retirement from the Executive, it does indeed constitute a revolution in our affairs if only for the reason that in the 27 years of the National Gas Council's existence the Executive has had no other Chairman. Moreover, since the Council was reconstituted very shortly after the last war, and Sir David was elected President, equally it has known no other. A strange commentary upon this fact is that Sir David, expressing thanks for his first election, gave it as his opinion that "these terms of office as President should be only short—not merely so that the honour might go round, but for the sake of getting fresh ideas brought in by new men." The Gas Industry has evidently held quite other opinions.

A dip into the 1916 and 1919 volumes of that unique record of the Gas Industry—the "GAS JOURNAL"—reveals many another interesting commentary, in the light of present-day circumstances, on our hopes and our disappointments. The former year saw the formation of the original National Gas Council, and contemporary thought attributed entirely to Mr. D. Milne-Watson's genius this first conception of a body which could speak with one voice for the whole Industry—derived of course from the crying need to present a common front to the bureaucracy of that other war, and to concert the Industry's own war effort. The return of transient peace witnessed a reconstitution on other lines of the Council, and so through the years we could trace Sir David's intimate connexion, as its acknowledged "leader," with every phase of the Gas Industry's activities. But we will content ourselves with acknowledgment of a phenomenal amount of hard work ungrudgingly given in its service, much of it not completely evident on the surface yet none the less successful, much of it carried through under internal difficulties which might well have caused a less strong man to give up hope long ago. We repeat the general wish of the Industry with which we would particularly associate ourselves, and of many outside it who for so long have looked to Sir David as its champion, that a restoration of his health may give him many more years of the service to it which we know would be his dearest desire.

§§

"OF THINGS TO COME"

THE important treatise by Mr. Leopold Friedman on the use of gas for water heating which we published in the "JOURNAL" of Dec. 3, 1941, resulted in considerable discussion both at the time of its publication and on various occasions since. We think that it has been seriously studied, but we suggest that it should be referred to again in conjunction with the latest contribution from Mr. Friedman, which we gave in the "JOURNAL" last week. This is a most interesting survey of planning possibilities in relation particularly to the provision of adequate supplies of hot water, on an acceptable and at the same time an economic basis, in the huge number of domestic dwellings which will have to be erected after the war—and not only in new houses; there is obvious need for improvement and replacement of equipment in existing dwellings. The Author, we know, has continuously followed planning movements of all kinds with keenest interest, and has devoted much time to their study from many angles and in the broadest sense. His short and balanced essay seems to us to be quite a model of balanced thought; it merits study by all concerned with the future of the Gas Industry.

We very much like the Author's insistence that development can only at best be partially effective unless we recognize at the outset the basic difference between planning houses and the planning of homes. It is a view we have ourselves expressed more than once, and we think that it is in fact gaining wider recognition. We were reinforced in this opinion by a talk last week with the Directorate of Post-War Building of the Ministry of Works—a talk to which we shall refer later. So many mistakes have been made in the past by considering the house as the primary unit and by paiyng little attention to the allocation of space to the various functional purposes. Generally, the equipment was chosen and installed by the landlord or builder, the first object being to catch the eye and sell the house. Few knew or cared about the suitability of the equipment. The basis for design and planning should be to make housework a pleasure and not a dreary uninteresting necessity. The home must be "liveable-in." The greater part of the housewife's time is spent in the daily routine of running a home, a task which mainly revolves around the preparation of food and the washing of clothes. The kitchen and the bathroom are her workshops. These necessities of life, maintains Mr. Friedman—and we agree with him—should lead and guide the efforts of the planner, engineer, and administrator when designing the house. The housewife should be able to cook, wash-up, bathe, launder, and carry out the housework and look after children with a minimum of effort, in the shortest time, and under pleasant and efficient conditions—a result which will be achieved only by the collaboration of everyone concerned. "Let us," said the Author, "start planning our new homes not by first fixing the positions of the walls and then filling the enclosed space, but by determining the actual requirements and then making the exterior fit the interior, so to speak."

Mr. Friedman discussed such principles and their implications in terms of the provision of hot water, arguing quite rightly from the desideratum that the process of water heating, irrespective of the means used, should be automatic and, from the consumer's point of view, trouble-free. "This means that the user of the appliance should not be required to give it constant attention, and should not have to budget the consumption in order to have some hot water available for any unforeseen requirement," and "it must as a complete installation be within the means of the lower income groups." Again, "the maintenance and running costs should be within the means of this class of user." It is this line of argument which led us to the suggestion that the present contribution should be read in conjunction with the

previous one published in the "JOURNAL" in the December of 1941. Finally the Author pointed to the magnitude of the possibilities which lie ahead, visualizing a building programme increasing to some 600,000 houses annually within five years after the war, and then decreasing over the following ten or fifteen years to normal replacement requirements. Every one of these houses must have as an essential part of its equipment some means of providing ample supplies of hot water economically and cheaply. We can also expect a large proportion of the old, out-of-date installations to be scrapped and substituted by more efficient means of hot water supply. The field is immense; and with rational planning gas should be called upon to carry a very great part of the hot water load. It is a problem, however, which will require the pooling of our resources and our efforts. If we are to solve it properly we should have a wide knowledge of social needs and habits, and should regard as a first essential the attraction to the Industry's ranks of trained and imaginative personnel—the corollary to which is the offer of salaries in step with those offered by other progressive industries.

POST-WAR BUILDING

LAST week, at a Press conference, we were told of the progress made in the study of building technique initiated in 1942 by the Directorate of Post-War Building. As we have previously explained in the "JOURNAL," the Directorate is not undertaking any research or experiment of its own, but is collating existing information, the whole scheme being to unify the activities of existing groups concerned with every branch of building activity, including the fuel and power interests. A major item is information on the most efficient methods of heating and ventilating, for which purposes an "installations policy committee" was set up, the aim being to arrive at agreed codes of practice. We referred in the "JOURNAL" of July 15, 1942, to the formation of a Gas Installations Committee with The Institution of Gas Engineers as convener; it is one of a total of 23 committees and has been among the first to submit to the Directorate a draft report, which we know has met with much approval and is regarded as almost at the "code of practice" stage. A Standards Committee, which is part of the Directorate, was set up as a central clearing-house for proposals emanating from the various study committees. The Committee will receive all recommendations for standards or codes of practice before they are transmitted to the British Standards Association or the Codes of Practice Committee, and it may also recommend to any of the study committees a particular line of investigation for the development of standards. The Codes of Practice Committee forms the second important post-war department. It was created by the Ministry of Works to link together the work of the various institutions and other organizations which have in the past undertaken the making of codes. All these have now agreed to pool their activities and to pursue them in future under the control of a single policy to be agreed between them.

We have been given reviews of first draft reports issued by the study committees. Each committee's report is circulated to all the committees to allow of full discussion on all matters of common interest, and the Directorate hopes so to link the 23 committees that they will function virtually as one—not a light task when one considers the enormous field covered and the variety of interests involved. We think that the influence of the codes cannot be otherwise than beneficial, though they are not intended to be compulsory measures. They will act as guides to good building and installation practice, domestic, commercial, industrial, and institutional—in brief, good building of all types. It seems to us that the work which is being done and the information which is being collected will minimize the difficulties which will inevitably have to be faced when this war is over—difficulties such as the supply of raw materials and the like. The codes, while they cannot prevent it, should serve as a deterrent to cheapjack jerry-building and installation.

We have not been allowed to see the first draft report of the Gas Installations Committee, but its publication eventually in final form has been promised. In the meantime we have been given an outline of its contents, and we should imagine that the practical recommendations made, which cover service pipes, distributing pipes (pipes between meter and appliances), meters, and appliances, are sound and to the point. Adherence to certain British Standard Specifications and to the meter specification of the I.G.E. is recommended and, rightly, strong emphasis is laid on the need, if good service is to result, for planners and builders to consult gas undertakings in the earliest stages of planning any new building, in order to ensure at the outset adequate gas supply to all appliances likely to be installed. There is equal emphasis placed on the desirability, again in the interests of good service to the consumer, of considering all types of heating appliance—cooker, water heater, space heater, refrigerator—not as an afterthought in house construction, but as integral with the planning of the home or business establishment and irrespective of the size of the dwelling concerned. Which common-sense reasoning will, we hope, prevail as a fundamental conception in post-war housing of all kinds. Both design and installation of gas appliances have been hampered because appliances have been installed as addenda to existing coal appliances, or because they have had to be fixed in positions not primarily or adequately provided for them. It seems obvious that certain general provisions should be studied, agreed upon, and made so that appropriate types of appliance for any form of fuel could be installed with efficiency, ease, and satisfaction. At this stage, as we have said, we cannot detail or discuss the relevant recommendations put forward on behalf of the Gas Industry by the Gas Installations Committee of the Directorate of Post-War Building, but we feel sure that, without time-lag, the Industry's views and suggestions are being properly and adequately presented to the Ministry of Works on this important matter of post-war housing.

Fall in Coal Production

At a meeting of the Fuel Efficiency Committee of the South-Western Region at Bristol last week the Minister of Fuel and Power expressed his grave concern at the fall in coal production. He said: "Although the serious decline in production which occurred last spring was halted and even to some extent reversed last autumn I cannot say I am satisfied with the position since the beginning of 1943. I have been watching the production returns in the last few weeks with serious concern. Although there are, at the moment, over 5,000 more men in the industry than a year ago, the production each week is nearly 100,000 tons less than in the same weeks of last year, and absenteeism is higher than it should be. Furthermore, at this time of the year we normally expect to see an upturn in the production figures, due to the improvement in the weather and the reduction in the amount of sickness." Major Lloyd George, remarking that it was largely because of low production last summer that the country was faced with a serious fuel problem, went on to say that if this is repeated this year, the position will be even more serious. "The indications at present are frankly not good. We must expect to have a lower average manpower over the whole of this year. As coal requirements are still rising, a better production per man will be needed." He added that he was counting not only on the normal seasonal improvement, but on a sustained effort throughout the summer to give us the stocks we shall most certainly need next winter.

This fall in coal production was discussed editorially by the *Iron and Coal Trades Review* in a recent issue. It remarked without qualification that the coal output bonus scheme has failed in its purpose. It had been recommended by the Greene Board as an inducement to the miners to make a special effort to increase production. The scheme has now been in operation for over six months, but during the whole of that period there has not been a single week when the standard output of the coal industry as a whole has been attained. Our contemporary, while expressing the belief that if, in the near future, circumstances arise calling for a greatly increased effort and the facts are clearly stated, there will be a ready response, points out that "cash alone is insufficient incentive to call forth greater efforts on the part of the mine-workers. The majority, it may be assumed, already draw enough money to meet their requirements in so far as they can be satisfied within the limits of rationing, and the scarcity of other consumable goods. Many have a violent dislike to contributing to income tax, which also tends to limit the amounts available for putting

into war savings. In present circumstances, therefore, from a purely selfish viewpoint, extra effort on the part of the mine-workers possesses little attraction for them. The remaining factor which may still be of considerable importance in determining the efforts put forward to increase output is that of national necessity." The nature of the need has surely been made clear by the Minister of Fuel and Power.

Coal Tar Products

At its last meeting the Executive Committee of the Association decided that the Coal Tar Bituminous Products Sub-Committee of the Association should pursue its investigations on coal tar products in order to determine the maximum number of uses for which pitch, &c., could be recommended to replace asphaltic bitumen. The Committee envisaged that this would be in the national interest from a long term point of view, as designed to secure the maximum use of an indigenous material. The results of an investigation which is being conducted throughout the industry are to be examined at a series of special meetings of the Executive Committee with a view to formulating the basic principles on which the future policy of the industry could be determined. The Executive Committee is continuing its investigation into the depreciation allowances for income-tax purposes in respect of tar distillation plant. The possibility of drawing up standard conditions of sale for pitch is being investigated.

Personal

The Council of the Institute of Fuel, at their last meeting, unanimously elected Dr. E. W. SMITH, C.B.E., D.Sc., F.I.C., M.I.Chem.E., President of the Institute for 1943–44. He will take office in October next.

* * *

Mr. C. S. KNOWLES, the Hatfield District Manager of the Watford and St. Albans Gas Company, has been appointed a Justice of the Peace for Hertfordshire.

Obituary

At the age of 90 the death has taken place of Mr. A. S. LEGAT, Chairman of the Coatbridge Gas Company.

* * *

The death occurred on April 8 of Mr. D. G. BLACKIE, senior partner in the firm of David Grant & Co., of Edinburgh.

Letters to the Editor

Correspondents are reminded that it is necessary for name and address to be disclosed to the Editor before any communication can be considered for publication, even when the writer has good reason for desiring anonymity in print.

National Gas Council

Resignation of Sir David Milne-Watson

A Meeting of the Central Executive Board of the National Gas Council was held on April 13, at Gas Industry House. Mr. Frank H. Jones, M.Inst.C.E., M.I.Mech.E., J.P., Vice-Chairman of the Board, presided.

The resignation of Sir David Milne-Watson from the Presidency of the National Gas Council and the Chairmanship of the Central Executive Board, due to ill-health, was reported, and it was unanimously resolved that a letter be sent to him on behalf of the Board, expressing deep regret at his resignation and thanking him for his many and great services to the Gas Industry during his long term of office.

Recent pronouncements by the Prime Minister and the Rt. Hon. Herbert S. Morrison (Home Secretary) with regard to the future of the Gas and Electricity Industries, circulated in the public Press, were discussed, and it was decided to refer them to the Districts for their consideration and report.

The statement made by the Minister of Fuel and Power (Major G. Lloyd-George) at the Annual Luncheon of B.E.D.A. with regard to the provision of all forms of service—gas, electricity, and solid fuel—in post-war houses was also considered and referred to the Districts.

A report on the general coal position was submitted.

It was reported that, following on the decision of the Board in March, the Officers had sought an interview with the Customs and Excise Department in regard to purchase tax, but owing to the attitude adopted by the Government officials it would appear that no useful purpose would be served by taking the matter further.

It was reported that there had been negotiations with officials of the Board of Trade on the matter of hire purchase and that good progress had been made.

The resolution of the Board in February last postponing the annual general meeting was rescinded and it was decided to hold the meeting on June 8, particulars to be announced later.

The next meeting of the Board will take place on May 11.

Clothes Rationing

The Gas Industry is included in a list of special industries for which new clothes coupon arrangements have been made. The essential requirements of most industrial workers are met by (1) reduced coupon rates for certain clothes and footwear, notably utility overalls, aprons, and boiler suits, and safety boots and clogs, (2) coupon-free supplies of specialized protective garments under certificates issued by factory inspectors and other authorized persons, and (3) a "general occupational supplement" of 10 coupons for the 1942–43 rationing period for most types of manual workers, but to meet individual cases of hardship in certain specified industries, including coking and gas, a small pool of coupons is to be available between now and June 19. The number of coupons in the pool will depend on the nature and size of the undertaking, but will not exceed five times the number of its manual workers. The pools are to be at the disposal of representative committees, who will draw on them as necessary. Details of the scheme are being notified by the Board of Trade to the trade unions and employers' organizations concerned. Application forms ED. 283 are available at the local offices of the Ministry of Labour, and with them will be issued a leaflet SFT. 1 containing full instructions and guidance on the use of the pool.

The Gas Offices of the Lanark Gas Undertaking have now been centralized, and are situated at Uddingston. The Undertaking comprises the Districts of Uddingston, Bellshill, Holytown, Carfin, Cambuslang, Blantyre, East Kilbride, Larkhall, and Stonehouse. All communications in connexion with any matter at all for these areas require to be addressed to the Engineer and General Manager, County of Lanark Gas Undertaking, County Gas Offices, Uddingston, Lanarkshire. The telephone numbers of the Offices are: Uddingston 456–7–8–9 (4 lines).

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

North British Association

The Spring Meeting of the North British Association of Gas Managers was held on April 9 in Edinburgh, when Mr. R. M. Simpson, Denny, the President, extended a welcome to a large attendance, some 160 being present. Reference was made to the following deaths: Messrs. John A. Robertson, Alva; William Balfour, Kirkcudbright; Robert S. Taylor, Haddington (ordinary members); and Messrs. W. H. Handley, of R. Dempster & Sons, Elland, and John Murdoch, of Metropolitan Gas Meters, Ltd., Glasgow (extraordinary members).

The **President** said Dr. E. W. Smith, formerly Director-General of Gas Supply, had intended to be present but, unfortunately, was indisposed. When the Directorate was formed about 18 months ago the choice of Dr. Smith gave universal satisfaction throughout the Gas Industry. That the choice was a wise one had been proved by the great success of the Directorate under his guidance. They were dismayed to hear of his resignation. They would suffer through the loss of his inspiring leadership, but had the satisfaction of knowing that Dr. Smith, free from the trammels of office, would be able to resume the fight for an economic fuel policy in which their Industry would take its rightful place. They had with them Mr. Evans, President of the Institution, and Dr. Braunholtz, the Secretary, to whom he extended a cordial welcome.

Mr. **E. V. Evans**, O.B.E., returning thanks for the welcome, said he was gratified to know that his successor as President of the Institution was to be a Scotsman, Mr. Jamieson, of Edinburgh. Mr. Jamieson would occupy the position with great dignity and efficiency. He congratulated the Scottish Gas Industry on the steps it had taken in connexion with Gas Engineering Advisory Boards and the creation of a Scottish Gas Development Centre. The latter, under the chairmanship of Mr. David Fulton, would give advice not only to industrial users, but also to those who had domestic appliances, and this was a distinct advance.

Presidential Address

Mr. **Simpson**, in the course of his Address, said that the efficiency of gas production, beyond a certain minimum capacity, is not related to capacity. The larger works consist, as far as production is concerned, of a large number of units, each of comparatively small capacity, and if each unit is operated with the maximum efficiency, the efficiency of the whole will be as high as possible. It is a matter of some doubt where the line should be drawn, but probably higher than 40 million cu.ft. per annum, below which some 60% of the works in

Scotland lie. In some instances these works are so placed geographically that amalgamation is a favourable proposition. In others, they are situated near enough to larger neighbours to make bulk supply a solution to the problem. We have been warned that it is in the best interest of the Industry that the small uneconomical unit should go. It has also been suggested that reform should come from within the Industry rather than by compulsion from without. That being so, now is surely the time for those responsible for the administration of these works to take stock, and formulate a policy to be put into operation whenever the time is opportune.

While the financial advantages of centralization or regionalization may not be readily apparent, it is now generally conceded that such co-ordination would result in improved efficiency through the availability of more scientifically trained personnel, better salesmanship, and a higher status for the personnel engaged in the Industry, with a corresponding increase in remuneration. The latter is particularly necessary if we are to attract the right type of recruit to our ranks.

The Industry, he continued, has every reason to be proud of the organizations which have been formed to foster the various branches of its activities, and there is little doubt that the aggregate result of their assiduous labours led to Government recognition of the national importance of the Gas Industry by the appointment of the Directorate of Gas Supply. The Directorate proved of immense help in solving current problems, particularly so far as labour, plant, and materials were concerned, and in obtaining recognition of the Gas Industry as a vital war industry. An important advance has been made by the recent inauguration of Gas Engineering Advisory Boards throughout the country. One can envisage these bodies taking an effective part in the future development of our Industry upon co-ordinated lines. It is the duty of every one of us to co-operate to the full in ensuring their success.

The recent formation of an Industrial Gas Centre for Scotland will meet a long-felt want, particularly in industrial areas. Although undertakings outside these areas may not perceive the immediate benefit to themselves of such a centre, it is to be hoped they will take a broad view and become subscribers, realizing that, by so doing, they are promoting the national usefulness of the Industry.

The work of the Technical Press is too often taken for granted. Week in and week out, we are kept abreast of current events in every phase of our activities. Their masterly leading articles and reviews analyze the more important aspects of matters affecting the course of our Industry, and are expressed without fear or favour, having regard only for what is best for its advancement and welfare.

The formation of the Ministry of Fuel and Power, so long advocated, has brought the Gas Industry into relation with the other fuel industries, coal and electricity. The possibility of collaboration among these industries, with a view to formulating a national fuel policy, apportioning to each the sphere to which its particular product is best suited in the national interest, should thus be brought nearer realization. There are, however, so many divergent interests involved that the opportunity may not be grasped until the Government appoint an impartial body to enquire into that aspect of the fuel question. It is significant that it is the Gas Industry who urge this enquiry, and that solely with the object of conserving the country's coal resources, promoting its economic welfare, and adding to the health and comfort of the community.

War service comes first, but plans are even now being prepared by our national organizations to meet immediate post-war changes. The most important will be the erection under Government auspices of housing schemes on an unprecedented scale. The Government are meantime planning the design and equipment of these, and their findings will greatly affect our future outlook. We may, I think, rest assured that the leaders of our Industry have taken steps to place before the Committees entrusted with these schemes the views of the Gas Industry with regard to the design of houses and buildings, so that full advantage may be taken of the amenities offered by gas and coke as the two most convenient and smokeless fuels at the disposal of the nation. Not only in post-war house building, but generally in the spheres of domestic space heating, water heating, and refrigeration, the Gas Industry is more alive than ever to the vast field that awaits cultivation. In this connexion the application of a scientific system of tariffs, the reduction of sulphur content in accordance with the recommendation of The Institution of Gas Engineers' Committee of Enquiry on Sulphur Removal, and the maintenance of constant pressure and calorific value, would be of great assistance.

It is mainly our concern, meantime, from the points of view of health, coal conservation, and economic welfare, that, in the interest of the country, gaseous fuel should be used where heat in flexible form is required. Our task is to enlighten the public on this matter to the extent of its becoming their concern. The prospects of our Industry are bright. Through the spirit of endeavour which is so strong within our ranks, our great national Industry will yet render ever increasing service towards the comfort and well-being of our fellow men. Let us see to it that we give of our best to that end.

Votes of Thanks

Proposing a vote of thanks to the President, Mr. **R. Fife**, Kilmarnock, Senior Vice-President, said they had reached a time in the history of their Industry with many undefined changes looming ahead. They were indebted to their President for his summary on the important subject of Excess Profits Tax. Taken in conjunction with his 1928 Paper on "Valuation and Taxation of Gas Undertakings" it made a valuable contribution to their proceedings.

Mr. **A. Jamieson,** Johnstone, Junior Vice-President, said the Address showed a remarkable record of good management and progress. Backed by a progressive Gas Committee, their President had shown courage, initiative and, above all, confidence in the future of the Gas Industry. It was not surprising that his policy had shown such good results. He had also proved that efficiency and good management were not confined to the larger undertakings.

Thereafter Mr. **E. V. Evans,** O.B.E., President of the Institution, addressed the meeting (see last week's "JOURNAL," p. 460.

Proposing a vote of thanks to Mr. Evans, Mr. **James Jamieson,** Edinburgh, Senior Vice-President of the Institution, thanked him for his kindly references to himself, and said it was a great compliment to the Association that the President of The Institution of Gas Engineers should twice within a year brave the discomforts of travel to come North, and give so much of his valuable time and effort to keeping them in touch with the larger developments within the Industry. The absence of Dr. Smith and his resignation of the post of Director-General of Gas Supply was the biggest setback in the history of the Industry. It was a setback which they did not expect, but one from which they would recover with, he hoped, renewed energy, vigour, and confidence. The Research Board, of which Mr. Evans was Chairman, would, he felt certain, play a most important part in this recovery. It would be idle for him to endeavour to embellish in any way the many tributes which had been paid to Dr. Smith and his team, but he would just like to say how he would welcome Dr. Smith back into their ranks as a free lance to renew the fight.

Mr. Jamieson said he regretted he must strike a critical note. Scotsmen in the past had made notable contributions to the technique and to the development of the Industry. It was his hope that Scotland would continue to make its contribution in the future. If that was to be possible it would be necessary for the Gas Research Board to widen the area from which its personnel was recruited. Scotland had the distinction of not having a representative, not even an Anglo-Scot, on its Board. That was a distinction which he hoped Scotland would not for long be permitted to enjoy. The Board had, however, paid Scotland a high compliment in appointing Dr. King, an exiled son of Scotland, to be the first Director of Gas Research. The choice was unanimously acceptable to Scotland, and South of the Border he felt certain it would be equally popular.

Mr. **Evans,** returning thanks, said with reference to the lack of Scotsmen on the Research Board, they had appointed Dr. King, a Scotsman, to direct the whole lot, and so the matter was in their own hands. The larger number of representatives was selected by the Institution, and Mr. Jamieson, as President next year, could no doubt influence a larger Scottish representation.

Luncheon Speeches

The President called on Mr. **J. W. Napier,** M.B.E., to propose "The City and Royal Burgh of Edinburgh." In doing so Mr. Napier thanked the North British Association for the honour paid to him last year when he was elected an Honorary Member.

Bailie W. Duncan, Edinburgh, replied.

Mr. **Arthur Woodburn,** M.P., Parliamentary Private Secretary to the Secretary of State for Scotland, proposing the "Gas Industry," said that Britain's wealth had always been its coal, and one of the tragedies of their history was that that wealth had been largely squandered. The business of the Gas Industry was to use scientifically this most valuable material. It was clear that this national wealth could not be allowed to be squandered by irresponsible people. The Ministry of Fuel and Power recognized that coal was not something separate from gas, electricity, transport, and chemical industries, but that all these were one great concern, and must be co-ordinated in a more sensible way than at present. There was, he thought, tremendous waste in bringing coal to the gas-works. It seemed an elementary piece of economy to take the gas-works to the coal and thence send the gas to where it had to be consumed. He felt also there had been a somewhat haphazard development of the relationship between coal, coke, gas, and electricity. National research should be instituted to find the most economical way of using power in industry. It was a tragedy that we should ship our coal overseas. It should go rather as manufactured products.

Mr. **E. V. Evans,** replying, said it was most encouraging to find a politician speaking in such a progressive and understanding way of their technical Industry. Mr. Woodburn had told them that their process economized coal. Actually, if they put a ton of coal through the gas-works and then used it for heating purposes the useful heat they obtained equalled that derived from one and a third tons of raw coal. To-day the nation was beginning to realize that coal was their main reserve and must be used with great care. Some of them had asked for a complete and impartial enquiry into the relative merits of producing heat and power from coal, so that the national interests might best be served as well as the interests of the consumer. This called for an impartial body of men who would view it in a dispassionate manner, having one thing only in mind—namely, the welfare of the nation. If that enquiry took place the Gas Industry would come into its own.

Councillor **Adam Miller,** Edinburgh, proposed a vote of thanks to the President and the various speakers.

SOME OF OUR PROBLEMS

[Contributed]

Joint Production and Demand

ONE of the Gas Industry's major problems is that, due to increased consumption of gas, coke is often produced in normal times in excess of demand. Conversely it is most unfortunate that in times of national need we cannot satisfy the demand for certain special products. Inevitably production of secondary products depends on the quantity of our primary product, gas, that we make. The demand for gas has governed the installation of plant at the various works; and the production of a cheap therm of gas has been the major deciding factor, with considerations of coke well in the background.

With horizontal retorts greater quantities of coke and benzole can be obtained, but less gas and tar than with vertical retorts; but it is the cheap gaseous therm which chiefly influences the choice made. The demand for our primary product controls the production of the secondary products. With existing carbonizing plants we can never fulfil the demand, for instance, for motor spirit; on the other hand, we have for some years produced for home consumption more than enough coke and tar. By finding markets this state of over-production could be reversed.

Among us there may be some who would like to see the producing plants of the Industry altered immediately. It is fortunate that this change cannot be brought about, for when hostilities cease, the excess production of solid fuel of the type we make will be in heavy demand for the Continent.

The greater the demand for gas the more intensive must be our marketing and selling efforts for coke and tar. In the manufacture and preparation of coke considerable effort in many quarters has been made, but to attain complete absorption for either domestic or industrial uses, which, it is suggested, is eventually possible, a great and determined concentration of effort and policy must be made. Is it not conceivable that with a local demand for coke in excess of production, and by reason of its enhanced value, gas prices could in turn be substantially reduced? Pre-1939 coke could be obtained delivered to cellars at under 2d. per therm. Gas produced by certain undertakings could be sold at as low as 3d. per therm—but at whose expense? It is agreed that what we need is a much lower price to the domestic consumer, not isolated cases of abnormally low prices to industry dependent on favourable conditions.

A refined and specialized coke would increase the demand for gas which could be offered at lower prices. This increased gas demand would be liable, however, to create marketing difficulties in the disposal of coke and tar; we should have a renewed state of production in excess of demand.

By pursuing a policy of increasing gas output without consideration of the secondary products we lay ourselves open to criticism and are committing the error of producing rival fuels for the heat market. Can we secure a state of profitable equilibrium of our primary and secondary products? A state of balance does exist in certain places. In other places it may appear to be there, but on examination it can be seen to be artificially maintained by either exporting coke or purchasing gas.

A few small, and in themselves insignificant matters can upset balance in individual areas or whole supply centres, and to prevent these disturbances we must be prepared for radical change in our relationship one undertaking with another. Even to-day a great deal could be done if undertakings would work closer with each other. The maximum production of gas by units whose requirements of fuel, labour, and materials are low would be an advantage to the whole Industry; underloaded plants mean in some form or other excess labour, high fuel consumption, and, in general, uneconomical conditions; steps to relieve each other of gas-making and other burdens could well be inaugurated.

Another form of mutual assistance, economic and commercial, would be the substitution of hard gas coke where available for soft gas coke, but this might at the moment harass transport; the point, however, is that large amounts of coke are being supplied unsuitable for the purpose for which they are used, and this proposal will, it is thought, eventually come under serious consideration. It is surely advisable to plan some line of action; otherwise, with fuel education, the coke-consuming public will know that certain classes of coke are not suitable, say, for central heating, and gas coke producers may lose profitable custom to hard coke producers.

The Ideal Unit

The principles of joint production must be considered in trying to plan the ideal gas-producing unit in the form which we know it at the present time. The intricacies and vagaries of manufacturing more than one product in the same plant require close examination of our production principles. Composite production on the scale practised by the Gas Industry requires more planning, more labour, more supervision, and consequently greater overhead charges than planning for an industry of equal size making one commodity. It is suggested that there is a size of plant from which optimum results can be obtained, and that individual units will require to co-operate to maintain such beneficial results and take advantage of their combined facilities.

Since many in the Industry favour gas production by large units, the writer has devoted much thought to this aspect, and has reached the conclusion that the principle upon which we should work is, as already stated, gas-producing plant of a size to give the best results, below which agreed size costs will increase, and above which size no benefit will be obtained.

It is true that certain large units are built to show economies in production, but the same applies also to certain small units. There is a line from which to strike somewhere, and we should strive to find it. Factors influencing a decision, assuming that carbonizing plants as now designed will flourish for the next ten years, include:

(1) The plant loading should be near 100%; this means that if groups are working together smaller units will require to be brought in to fill peak demands.

(2) A highly refined plant, well lighted, ventilated, air conditioned, dustless, and having the most efficient equipment.

(3) The relation between therms made and man power should be arranged so that the maximum make per whole man employed is secured.

(4) Coal throughput must be related to both therms made and men employed.

(5) As the coal throughput for a given calorific value is related to the residual coke, the machinery and labour for coke handling must have some relation to time, and as the carbonizing process is continuous, the handling of coke should also be continuous.

(6) The transporting from place of manufacture, handling, and preparation of coke should be dealt with wholly by an entirely independent works; the same principle applies to other residuals as followed in certain large undertakings—that is, there should be a separate by-product or chemical works.

(7) The road haulage of coke could well be undertaken by independent specialists attached to the coke works.

(8) A ready and truly functional process for our surplus coke—in other words, gas-making plant capable of dealing with set quantities of coke.

The principle underlying the whole of these proposals is that there must be a plant of a size which provides a definite relationship between man power, primary and secondary products, and, less important, other products, haulage, and raw materials. In simple form each man unit employed must have a wholetime job at one operation or process, the carbonizing plant being large enough to sustain this principle throughout.

A plant requiring excessive labour, technical supervision, or maintenance may possibly fall within the category of the ideal unit, but it is most unlikely, for in one or other of these particulars it will fail.

The rightness or otherwise of the points put forward will best be judged by comparing with the method of building gas manufacturing plants up and down the country. A plant is designed and extended to cope with the maximum demand within the area of supply. More often than not the auxiliary and storage plant is not added to cope fully with the maximum gas output, and resort is had to subterfuges. We know that in normal times our plants are standing idle to the extent of something like 35%, taking one year with another; and this means unproductive capital, and to a lesser degree increased overhead charges.

The Small Undertaking

A problem to most undertakings, whatever their size, but more particularly to the small undertaking, is that of "staffing." What amount of clerical, administrative, and technical staff can an undertaking carry—

(1) to give the best to the concern and fair remuneration to the personnel;

(2) to provide all reasonable information and statistics, and to give enough supervision and attention to detail.

The size of staff does not always depend on the size of undertaking, the profits, or the price of gas; but an undertaking whose call for loan or dividend requirements is low can spend more money on staff. In many cases, to meet development in certain directions, such as increased works efficiency, attention to industrial consumers and adequate costing, sacrifices will have to be made, probably to profits, or those undertakings not able to provide adequate staff will have to go. What is more, the Gas Industry must be prepared post-war to sustain higher wages and higher costs, and at the same time to offer gas at an attractive figure.

Fighting Services

Attention has been drawn by an important figure in the Gas Industry, Mr. A. E. Sylvester, to the lot of those returning to civil work who are now serving in H.M. Forces. How is this problem going to be tackled

in the Gas Industry? With the 18's being called up, this subject takes on greater importance. During the years immediately following 1919 some slight consideration was given to those who had joined in the fight. However, it was recognized that a young man, an ex-student, apprentice, or pupil, could not, having joined up at the age of 17–19, be of much use in the struggle for trade for some years; his contribution, in other words, to the efficiency of an undertaking would be relatively small.

The Service Acts require an employer to reinstate those taken away. This, in itself, is an excellent provision, and for all but the under 25's, allows them to restart where they left off. For those who have previously completed, or nearly completed, their training, there will be a measure of hope. But the chance of regaining lost ground for the under 25's whose early training has been interrupted is very small.

Efficiency

The Gas Industry, it is thought, in some respects is working much more in unity than it was two years ago. We must assess our difficulties correctly and put to right our deficiencies. Directly bearing on this is the introduction of the Fuel Expenditure Index K. The "Gas Journal" has discussed this subject, but more has been said than has been written, which is quite natural. About the whole matter we must not be too exact and calculating—a point which younger engineers and technicians might well bear in mind. Had a body of the younger of our executive engineers been asked to produce some such figure, it is probable that a more exacting measure of our efficiency would have been attempted. However, it is anticipated that much good will comes from the introduction of this rough assessment of manufacturing economy, though the writer suggests that it needs thought. For example, on the face of it, an increase of three therms of gas from one ton of coal—no mean achievement—make a difference of only ½ point; an increase of a gallon of benzole, to-day of much greater importance, especially if high in toluole, makes a difference of only ¼ point; whereas a 5% increase in coke made for sale makes a difference of 2.2 points, and so on. Our 1939 manufacturing conception of the Gas Industry needs now to undergo a radical change if the Fuel Expenditure Index K is to be pursued. The great significance of the Index lies in a reduction of the fuel used for gasmaking.

Earlier remarks in this article will show the value attributed to coke; if seriously tackled, coke will become recognized in the near future as the Industry's main product. Which makes matters rather confusing. In the past we have neither had the vision to dispel our coke "incubus," nor courage to re-use to any extent our surplus and accomplish our true function.

Unity

Success for the future of the Gas Industry is the earnest wish of us all, but without unity our prospects are poor. During the past few months a credit has been built up in this direction, but it seems unfortunate that the hurried formation of Advisory Boards took place before the individual members of the Gas Industry were made aware of their failings; it is suggested that the circulation of Index figures should have preceded by a reasonable margin of time the formation of these Boards.

A straight and lucid statement would relieve a large body in at least one district as to the legal and constitutional correctness of the foundation of a body of professional men to advise their contemporaries. It would appear that no part of the constitution of a district association has the power to create such a body. The impression given to a large number was that this matter of Advisory Boards should come up before the districts, meaning obviously the associations. This would have allowed members the opportunity of expressing themselves about such an important matter. The usual shroud of mystery overhangs this bureaucratic action. Members of the various districts should have had the chance of a vote, instead of which, in one district in particular, they have been entirely ignored. This method of handling responsible men will not do, and much of the growing unity has been dispelled.

USE OF NON-AERATED FLAMES IN GAS APPLIANCES

Through the courtesy of the Severn Valley Gas Corporation, Ltd., and Gas Consolidation, Ltd., we are able to publish the following report submitted to them

by J. S. G. THOMAS, D.Sc.

GAS, in its early days, was used entirely for the purpose of providing light. Every endeavour was made to produce gas of potential high luminosity, and many were the attempts to design burners in which that high luminosity could be developed. The statutory standard to which gas had to conform was one based upon the luminous value of the gas when burned in a standard burner. In those days towns' gas was so "rich" that it was a matter of very considerable difficulty to design a burner in which maximum luminosity was developed. The Argand and Carpenter "C" burners mark stages in this development. Then came the *non-luminous* Bunsen burner, which enabled gas of any quality to be burned completely after gas and primary air supplies had been suitably regulated. The Bunsen burner was welcomed by the Gas Industry, and it found application in all sorts of directions. The self-luminous gas burner became a thing of the past; it survives in a relatively small number of flat-flame burners.

Conditions in the Gas Industry to-day point to the fact that the non-aerated burner has been rather too hastily abandoned by the Industry, which has much to gain by a return to its "first-love." The industry generally labours under two misconceptions regarding the characteristics of non-aerated flames: (1) It is usually imagined that combustion in non-aerated gas flames is less complete than in the bunsen flame, and (2) it is generally considered that the bunsen flame is very much hotter than the non-aerated flame—the so-called luminous flame. Both are erroneous. After all, is not the calorific value of gas determined in accordance with statute law in a calorimeter using a non-aerated flame? And is it likely that this type of flame would be used for such purpose if combustion in it were less complete than in a flame of the non-aerated type? Extensive experimental work has shown that combustion can be equally complete in flames of either the Bunsen or non-aerated type, and, moreover, when combustion is complete in either, the amount of heat developed per cubic foot of gas burned is the same. Again, while in general the bunsen flame has a slightly higher overall temperature than the non-aerated flame, this difference is small. There are parts of the non-aerated flame which are at least equal in temperature to the highest found in the bunsen flame. Further, either flame possesses an average temperature which is more than adequate for the tasks that gas is called upon to perform. Bunsen invented the bunsen burner not for the purpose of attaining a higher temperature than that given by the Argand type of flame, but for the purpose of achieving complete combustion of the gas more readily and easily.

Within the last twenty years or so two revolutions, one noisy and the other silent and almost unobserved, have occurred in the Gas Industry. The first, the noisy one, concerns the passing of the Gas Regulation Act, giving gas undertakings freedom of choice of the calorific value of the gas they desire to supply. Under this Act there has been a general scaling down of calorific values. Gas supplied throughout the country to-day is not as "rich" as it was before 1920, or, rather, before 1914. It follows, then, that gas to-day is more easily burned completely in flames of the non-aerated type than was the case before 1914. The second revolution concerns the introduction of improved forms of burner tips, which enable gas of any calorific value to be burnt completely in flames of the non-aerated type, with no trouble whatsoever. Their introduction has not attracted the attention it deserves on the part of the Industry. They make possible a replacement of burners of the bunsen type by non-aerated burners in all sorts of gas-burning appliances except such as are required for very special purposes. Bunsen burners are subject to many troubles: There is first of all the necessity for suitably adjusting gas and primary air requirements by some kind of device, which, after it has been appropriately adjusted, is liable to be disturbed. Then, by the operation of natural causes, the orifice in the ejector through which gas is supplied to the flame is liable to become clogged up by dust contained in the primary air or gas'supply. This upsets the gas-air ratio. Too often in amateur attempts to put matters right, a pin or nail is called into service and the burner is put *hors-de-combat* once and for all. The bunsen burner is a highly scientific instrument; too often it is treated with the familiarity that breeds contempt. It is my opinion that it never will become a foolproof appliance. That characteristic belongs only to the non-aerated type of burner. This is making a little headway in the Industry. It would have made much more had it not been for the war. In the days immediately preceding 1939 I saw a number of gas fires employing flames of the non-aerated type. They burned perfectly silently and performed equally well when supplied with 450, 500, or 560 gas. They were, in my opinion, a very considerable advance on anything we have yet had in the way of a gas fire. They could be turned down to one-quarter of their normal consumption without any sign of sooting, except in the case of the fire supplied with 560 gas. I have no doubt whatever that this type of gas fire will be *the* fire in post-war years.

I have in my kitchen at Cheltenham a "New World" "Alpine" gas cooker having luminous burners in the oven. After three years' satisfactory service in the area of supply of the South Metropolitan Gas Company (C.V. 560 B.Th.U.) it was moved to Cheltenham

(C.V. 450 B.Th.U.), where the oven burner required *no* adjustment, although the hotplate burners required very considerable adjustment owing to the transfer. Pressure of gas supply to the oven can be turned down to the very limit without producing sooting, firing-back, or any trouble whatsoever. Not so the hotplate; a moderate drop of pressure of supply causes firing back, with all its consequent troubles. I have experimented in the laboratories of the South Metropolitan Gas Company, with a hotplate provided exclusively with burners of the non-aerated type. A successful model was developed, and I have no doubt will be marketed in post-war years. One advantage of the oven provided with non-aerated burners is the fact, borne out by five years' experience, that cakes cooked in such an oven are better browned than when cooked in ovens of more orthodox type. The oven with non-aerated flames has my very strongest commendations; I have no doubt at all that the non-aerated cooker top is on its way.

Everyone in the Gas Industry is familiar with the fact that gas burners used in gas water-heaters are, almost universally, of the non-aerated type; they stand up to their work well, although conditions for achieving complete combustion are about as adverse as they can well be; a large volume of gas is burnt rapidly in a relatively small space enclosed within a water chamber in which the temperature nowhere exceeds about 212°F. Here is evidence in plenty that the non-luminous flame can be effectively used by the Gas Industry. Bearing in mind that the gas water-heater is, in effect, designed on the lines of a gas calorimeter, it is not surprising to learn that the thermal efficiency of water heaters in general is very high—of the order of 85–90%. The water-heating load is one of those loads which, by the very nature of things, belongs essentially to the Gas Industry. Consider for a moment what is the competitive price at which electric power must be sold if it is to stand a chance of getting a firm footing in this field.

Gas.	*Electricity.*
1 therm	1 Board of Trade unit.
100,000 B.Th.U. . .	3,416 B.Th.U.
85,000 B.Th.U. usefully employed (85% efficiency)	3,074 B.Th.U. usefully employed (90% efficiency).
Gas at 1s. per therm . .	Electric power at $\frac{12 \times .3074\text{d.}}{85{,}000}$
	0.43d. per Board of Trade unit.

To compete with an *all-in* rate of charge for gas of 1s. per therm, electric power used for water heating would have to be sold at an all-in rate of 0.43d. per Board of Trade unit. Electric power is frequently sold at this rate in a two-part or other tariff scheme, but the more usual rate in the absence of such a scheme is very many times the customary gas charge for equal performance. The customary ½d. per unit charge for power on any electric tariff scheme is a charge devised to make the charge for electric power appear competitive with the gas charge. In any case the Gas Industry has the water-heating load in its hands with coke used as fuel in the "Ideal" type of boiler. Crediting this boiler with an efficiency as low as 30%, the competitive price for electric power at ½d. per unit is £7 per ton—*i.e.*, for coke.

The Gas Industry has at its service gas water-heaters of many types and makes. The principal of these are the sink-heater and geyser type and the storage and circulating types. Most perform their tasks well, and each has something special in its favour. Where relatively small quantities of hot water are required at intervals throughout the day, the sink heater has much to recommend it. But its extensive introduction tends to the incidence of peak loads if the distribution system is at all liable to overload. The geyser (now more generally referred to as a gas water heater) is a valued, tried, and trusted friend. The storage heater avoids the incidence of peak loads. Some forms burn gas at so low a rate that a flue outlet is unnecessary.

THE BEVERIDGE REPORT*

WITH SPECIAL REFERENCE TO PENSIONS AND WORKMEN'S COMPENSATION

By HENRY LESSER, O.B.E., LL.B.

(*Concluded from p. 471*)

But there are other implications arising out of this condition which seem to me to require the serious consideration of industries such as ours. If, as appears likely, use is to be made by the State of its powers to direct into employment persons who are out of work, would there not have to be some corresponding form of control over the place of employment. We have seen that if the unemployed man refuses to accept "directed" employment, he would not only forfeit his benefit, but would be subject to "penalties" as yet undefined. The question therefore arises—would not the employer on his part be likewise subject to penalties if, say, he discharged a man without official authority, or otherwise failed to comply with statutory regulations governing the conditions of employment? This is a procedure with which we have become familiar under the Essential Work Order, and without further explanation similar conditions would seem to be implicit in the Beveridge idea of penalties, though these conditions are not expressly mentioned. It is true to say, I think, that the provisions for limiting the title to unemployment benefit are not understood by the people generally, and I rather wonder whether employers have yet given sufficient attention to this aspect of the Beveridge proposals. At all events may I not with respect suggest that industry would do well to have these points cleared up. To what extent Government control under a system of planned employment may be necessary after the war, no one can at present tell. But if it be said that such control is a natural corollary to the Beveridge scheme of social security, then whatever justification there may be for it, I think it is important that neither workpeople nor employers should be left in doubt as to their position.

Widow's Benefit

Again take widow's benefit. At present a widow gets 10s. a week payable for life or until remarriage, with allowances for children up to 14 years of age, or the date they leave school. If she finds work she still gets her pension. Under the Beveridge proposal a widow without children would get a weekly allowance of 36s. for 13 weeks only. After that the allowance stops. She must be trained for work of some kind suitable to her capacity, and would receive training benefit for 26 weeks at 24s. a week. If a widow has dependent children she would, after 13 weeks, receive Guardian Benefit of 24s. a week so long as she has the care of them. If she goes out to work, however, a reduction from full Guardian Benefit would be made of a proportion of her earnings. There is undoubtedly something to be said for this proposal, but it should be remembered that these conditions apply not merely to young women in their twenties or thirties, but to widows in their forties and fifties—up to sixty years of age, when, if the widow retires from work, she may take her pension. This seems a little hard on the older women, and I think should be modified in their favour.

* Paper to the Southern Association of Gas Engineers and Managers, March 26.

Disability Benefit

There is little I need say to you on the subject of ordinary disability benefit except that its efficient administration will depend on the establishment of the comprehensive health service which you will remember is one of Sir William Beveridge's assumptions. There is, however, a point in the Government Actuary's report which it would be useful to note, and that is that he allows for a 12½% rise in the sickness claims as a result of the substantially increased rate of benefit and its unlimited duration. It is well known to doctors that the question of incapacity for normal occupation is not always an easy matter to determine even in cases of temporary illness, but when you have to decide the question of permanent incapacity for any work as a qualification for the payment of benefits for an indefinite period of a weekly amount of, say, 56s. (including children's allowances) for the average case of a married couple with two children, the responsibility is vastly greater because of the very serious financial repercussions on the benefit funds. Account must also be taken of the additional payments which a man might receive from his friendly society, trade union, or similar fund. There are two points arising from this:

(1) The possible reaction of this high rate of sickness benefit on wage rates, and

(2) An increase in the amount of working time lost through illness.

I ought to mention that the Government are not prepared to accept responsibility for unlimited duration of benefit. Their proposal is to limit the period during which insurance benefit is payable as of right and to institute a scheme of invalidity benefit at the pension rate in the case of chronic illness. That is a step which, if I may say so, I have long advocated, and I feel confident it would be more satisfactory than that recommended by Sir William Beveridge.

That I am afraid is all I can say to-day on the subject of benefits.

Finance

No serious discussion of the Beveridge Report, however brief, should ignore altogether the financial provisions of the scheme. The subject is a little complicated, and I do not propose to deal with it at any length. There is, however, one aspect of the matter which should receive careful attention. There are different rates of contributions for employed persons (who number over 18 millions) and other persons gainfully occupied (about 2½ millions). We are chiefly concerned to-day with employed persons. For these the rates of contribution are 4s. 3d. a week for the insured person and 3s. 3d. for the employer in the case of men; for women 3s. 6d. and 2s. 6d. respectively. But as Sir William points out there is the citizen as insured person whose employer has to put a stamp on the insurance document, and the citizen as taxpayer who also has to bear his share of the cost

which falls on the National Exchequer—so the weekly contribution is not all he will have to pay. The same thing applies to employers. The employer's contribution is a tax on employment—it is not related to the employer's profits or capacity to pay. Neither does it vary according to the extent to which the employer endeavours to avoid unemployment or sickness. The employer's social insurance contribution alone will rise from the present figure of 1s. 10d. a week to 3s. 3d. for each man, and from 1s. 6d. to 2s. 6d. for each woman—amounting in total for employers over the whole country to an increase from £66 millions a year in 1938–1939 to £137 millions in 1945. As against this, of course, there may be some small saving in respect of Workmen's Compensation. But in any case it is important to bear in mind that the employer's burden would not end with the payment of his weekly contribution, since as taxpayer he will also have to bear a considerable proportion of the cost to the Exchequer.

In 1938 the cost of existing schemes of insurance was £432 millions. It is estimated that the total security budget would amount to £697 millions in 1945, as the first year of the Plan, and £858 millions 20 years after in 1965.

If you ask whether the country can afford this expenditure you are sometimes met with the reply—"Can we afford not to incur the cost?" But surely that is only begging the question. The financial burden is important, and the responsibility must rest on the Government to-day for any decision which may affect the future rights of insured persons. If definite commitments were made now under an insurance scheme where benefits are guaranteed the Government would not be able to say after this war, as they did after the last war, that "it is time for the nation to turn from searching its conscience to exploring its purse." Meanwhile there is no knowing how long the war will last, or what will be the cost of armaments after peace is declared, or how many unemployed will have to be maintained, or what will be the value of money, or what will be the cost of rehousing the people. But money for these purposes will presumably have to be found somehow, and if, as Sir William suggests, it can be done by a re-distribution of the national income, then both workpeople and employers should realize that they will, as citizens, have to pay their share of the increased burden. In these circumstances it would seem that Sir Kingsley Wood did no more than might have been expected from a prudent Chancellor of the Exchequer when he said recently in the House of Commons that whatever pledges were given in regard to the Beveridge proposals they were subject to the reservation that the position would have to be reviewed in the light of the country's financial position at the end of the war.

Administration

With regard to the administrative framework of the scheme, here again the Government are dubious about the wisdom of setting up as Beveridge suggests a Ministry of Social Security. The idea of unification—that is, administration of all these services through one Government Department—is undoubtedly attractive. But I am by no means alone in the view that in this matter Sir William appears rather to oversimplify his problem. The vast comprehensive health service which he envisages would be administered by the Ministry of Health, and the extremely complicated employment service by the Ministry of Labour. But each of the social insurance services, health, unemployment, and pensions, represents a distinct body of ideas, and involves such a variety of circumstances associated with the individual way of life of millions of insured persons, that in my opinion a system of administration is required peculiarly suited to each particular service. The payment of the respective cash benefits is inextricably bound up with the conditions governing the title to them, the determination of which involves a different technique in each branch. For example, the payment of unemployment benefit is purely incidental to the work of bringing employers and employed together—of finding the right man for the right job. The payment of disability benefit is incidental to the operation of the health services. Maternity benefit—something quite different from the single payment made under the National Health Insurance scheme—is, I think, properly incidental to the maternity and child welfare services. To divorce these cash payments from the work of the departments responsible for the administration of the major services, and set up an entirely new Ministry simply to play the part of cashier to the Ministry of Health and Ministry of Labour—for that is all it comes to—might well lead to much delay, if not confusion, in the payment of benefits and to the consequent inefficiency of the service. Sir William appears to apprehend this because he recommends the establishment of a liaison committee between his Ministry of Social Security and the other Government Departments concerned. But why a separate Government Department? Have a supervisory statutory committee by all means to review and co-ordinate the amounts of the cash payments, but such duties would hardly seem to require the setting up of a new Government Department, employing many more thousands of officials, to do work which is now being done very well through existing departments. But, says Sir William, if you do it his way, you will avoid waste in administration expenditure.

The Government Actuary says that having regard to the complexity of the proposed unified organization, it appears unlikely that there would be any saving at any rate for a considerable time to come. The Government suggests the setting up of a Social Security Board, but this is not yet finally decided.

In his recent Parliamentary statement, Sir John Anderson said it is no light matter to abolish the approved societies, and that if they have to go it is not because they have failed, but because there would be no place for them in a scheme embracing the whole population. And so the door is left open for a scheme to be devised which may enable the societies to co-operate with the Government in some form of agency. The societies are studying the problem.

A Constructive Suggestion

And now, having called attention to what in my opinion appear to be certain weaknesses of the Report, may I presume to leave with you for your further consideration a constructive suggestion? Under the Beveridge plan, the State must guarantee all the benefits indefinitely whether in cash or in kind. Its liability is unlimited and unascertainable. Beveridge is, therefore, compelled to impose restrictive conditions and penalties which, by impinging on the personal liberty of the insured person, robs the scheme of its true insurance character. In my view there are limits to what a social insurance scheme can do—every country has found it so. Those limits depend on what the insured person, his employer (if any), and the State can afford to contribute to it. They certainly can afford to pay a rate of contribution to cover temporary sickness and unemployment—say, for a period of one, or, it might be, two years. That would cover the industrial hazards applicable to the overwhelming majority of insured persons during interruption of earning. But in the case of chronic illness or unemployment, the problem changes. It is at that stage that the State, through the appropriate department, should take control and make the necessary provision, subject to suitable safeguards, for the well-being of the sick man or the unemployed person, as the case may be. Remedial or preventive treatment, rehabilitation, and training for new work, together with a host of other needs, fall logically to be dealt with under the heading of welfare or social service—and lead to the suggestion for the establishment, not of what Sir William calls a Ministry of Social Security (which as I have shown is merely a sort of large scale cashier's department), but of, say, an authority responsible for social security. So that you would have:

(1) An insurance scheme proper whereby benefits can be obtained as of right by virtue only of the contribution paid without any limiting conditions impinging on the personal liberty of the insured person, and

(2) A department of Social Service which, when the insurance benefits were exhausted, would take charge of the case, whether in relation to the health service or the unemployment service, and authorize the payment of suitable allowances on an agreed scale and subject to appropriate conditions out of moneys to be provided by the National Exchequer. The nucleus of this service is at present contained in the Assistance Board which is expressly charged with the welfare of unemployed persons, and, as its last report shows, that body has done excellent work in that respect.

The country needs a welfare service in the true sense of the word, and the establishment of a department of Social Service would breathe a new spirit of fellowship and kindliness into the administration of our social services. It would gain a wealth of experience of social conditions and human needs which would fall quite outside the scope of the insurance scheme, and would unite the people with the State as members of one great family. If, as Sir William Beveridge says, life is to be harder for us all after the war, how much greater will be the need for a sympathetic understanding of our communal responsibilities over as wide a field as possible through a department charged with that specific duty.

Conclusion

And now, Gentlemen, I must close this somewhat hurried review. If I have appeared to be a little critical of some of the Beveridge proposals, it is not, believe me, with any object of disparaging the brilliant achievement of its very competent author. But the recommendations before the country are, after all, those of one man only. Sir William has a genius for clear and concise statement, and his argument, by the very manner of its presentation, is at once fascinating and disarming. It would have been better, I think, if the Inter-departmental Committee had given a Minority Report. We should then have had other expert guidance on this very complicated problem of the extension and reorganization of the social insurance and allied services. As it is, we can only study the Beveridge Report in the light of such knowledge and experience as we may ourselves possess, and endeavour with proper humility to make a useful contribution to the discussion of it.

In conclusion, will you permit me to add one word of a more general character. Why, I ask myself, do the members of an industrial association such as this gather here to-day to talk about such matters as pensions, unemployment, and sickness benefits, workmen's compensation, maternity benefit, and widow's benefit? What is the relevance of all this to the particular work on which they are engaged? Is it not, Gentlemen, because you have come to realize that the more personal side of the industrial relationship holds an important place in the science and art of labour management—and that much of the social legislation of recent years only gives expression to the hopes

and aspirations of those with whom you are banded together in the same industrial enterprise? I think it is. Industry functions to-day in a social and political environment which it cannot control, but most certainly can influence, and the human factor calls more urgently than ever before for practical and sympathetic interpretation. The contract of service has long ceased to be the narrow thing it was—a simple agreement between master and servant. By one Act of Parliament after another—a great body of industrial law—it has been expanded by the incorporation of statutory obligations which reflect the growing interest of the State in the well-being of its citizens. That is the true significance of the Beveridge Report—and his plan for social security cannot succeed unless the industries of the country can support the financial burden of it. In the unpredictable conditions of the post-war world the Gas Industry is striving to shape its own destiny. But whatever the future may hold, our Industry has great traditions of broadminded and enlightened administration, and will, I feel sure, not be found wanting in its own contribution to the social betterment of all who directly serve it and of the country at large.

Reprints of Mr. Lesser's Paper can be obtained from Mr. W. A. Howie, Hon. Secretary of the Southern Association of Gas Engineers and Managers, Gas-Works, St. Peter Street, Maidstone, Kent, price 6d. each, post free.

Production of Gases Rich in Hydrogen

The Gas Research Board, F. J. Dent, and A. Key have been granted a patent (No. 549,838; application date, Aug. 15, 1941) concerned with the production of gases rich in hydrogen. The patentees point out that by the gasification of carbonaceous fuels with steam, by intermittent blowing with air and steam as in a normal water gas generator, there is obtained a gas composed mainly of a mixture of hydrogen with up to an equal volume of carbon monoxide and a smaller volume of carbon dioxide. By converting a part of the carbon monoxide in the gas into carbon dioxide by reaction with steam in presence of a suitable catalyst and removing the carbon dioxide by known methods, there is obtained a gas containing a high proportion of hydrogen which is suitable for use in the synthesis of gaseous and liquid hydrocarbons and for hydrogenation reactions in general.

A difficulty encountered in the production of gases rich in hydrogen by this method is the need for purifying the gas produced by the gasification to remove sulphur compounds, the presence of which would result in destruction of the activity of the catalysts hitherto used in the subsequent conversion of the carbon monoxide. And the patentees go on to say that the reaction of carbon monoxide with steam is also applicable in general for reducing the proportion of carbon monoxide contained in a gas. They have found that sulphides of molybdenum act as catalysts for the reaction between steam and carbon monoxide, and that they remain active notwithstanding the presence of sulphur compounds in the reacting gases. Consequently the use of a molybdenum sulphide catalyst renders it unnecessary to free the gases from sulphur compounds before the conversion of the carbon monoxide, so that the process is simplified.

In carrying out the invention, the gases may be passed over the catalyst at a temperature of 300° C. or higher, but below that at which the equilibrium conditions are such that the reaction no longer proceeds to a useful extent. The invention is applicable with particular advantage to the production of a gas rich in hydrogen from gases containing carbon monoxide and steam, especially from the gases resulting from the gasification of carbonaceous fuel with oxygen and steam. In this application of the invention it suffices to pass the gases leaving the generator directly over the molybdenum sulphide catalyst, the undecomposed steam present in the gases serving for the conversion of the carbon monoxide without the need for supply of additional steam. In the process as hitherto practised the undecomposed steam in the gases is condensed during the cooling which is a necessary precedent to the removal of sulphur compounds from the gases, so that additional steam must be generated and supplied to the purified gases for the conversion of the carbon monoxide. The invention thus considerably increases the thermal efficiency of the process.

Any desired sulphide of molybdenum, for example, molybdenum disulphide, may be used as the catalyst, and it may be in the form of pellets or in the form of a deposit on an inert support. The particular sulphide of molybdenum which actually catalyses the reaction depends on the sulphide which is stable under the conditions of temperature, pressure, and concentration of hydrogen sulphide in the gases treated, and if the sulphide which is stable under any given set of conditions is not present from the outset it will be automatically produced when those conditions are established. The following example illustrates the invention:

The gases produced in the continuous gasification of carbonaceous fuel with steam and oxygen under a pressure of 20 atmospheres were passed at a temperature of 450°C. directly over a molybdenum sulphide catalyst in the form of pellets of molybdenum disulphide of a size of 8–16 I.M.M. The gases leaving the generator and the gases after passage over the catalyst had the compositions:

	Leaving the generator.	After passage over catalyst.
CO_2	13.85%	25.85%
CO	20.25 „	8.25 „
H_2	31.95 „	43.95 „
CH_4	2.00 „	2.00 „
N_2	1.50 „	1.50 „
H_2O	30.45 „	18.45 „
	100.00 „	100.00 „

After passage over the catalyst, the gases were cooled and washed to remove carbon dioxide, yielding a final gas containing 79% of hydrogen and having a H_2/CO ratio of 5.35.

Control Taps

Cannon Iron Foundries, Ltd., R. T. Clayton, and A. F. Oatley have been granted a patent (No. 545,995; application date, Oct. 24, 1940) relating to taps controlling gas to burners working in conditions where the flame is not visible. For example, the burner may be employed for heating a hotplate or grid and may be arranged in a chamber below the plate or grid. The control tap on the gas supply to the burner may easily be operated in such circumstances in a manner inconsistent with the particular flame condition at the moment, and the gas supply may be inadvertently cut off or unduly increased or reduced.

The invention provides a tap having safety means incorporated so that it cannot be operated to turn off the supply by a single rotary movement of the tap lever; a further deliberate operation is necessary on the part of the user. Similarly a second movement is necessary to turn on the supply. There is a positive stop for the operating means in turning from the supply position, at which stop a supply of gas is made to the burner which will maintain the liquid contents of a boiling utensil at the simmering condition. This stop position is made adjustable so that variations in the calorific value of gas supplies can be allowed for in the setting of the device on a particular apparatus.

The operating member of the tap is made slidable relatively to an extension of the tap plug, and can cause the movement along the plug extension of a further slidable plate member which is keyed to the plug extension so as to turn always therewith. This plate member carries an axially directed arm which has a portion which will lie in the same cross plane of the plug as a projection or pin in a member secured to the plug body in an adjustable manner. The latter part may be arranged as a perforated cap through which the extension on the plug passes, the sides of the cap being screwed externally to screw into a thread in a socket-like part formed on the plug body around the part which receives the cock plug. The adjustment may readily be made by providing this cap part with a hole into which a set screw can be passed, and providing the housing with a circumferential slot through which the set screw passes so that the cap can be locked in any angular position within the limit allowed by this slot by tightening up the set screw until its head clamps the side borders of the slot. It is convenient to arrange a spring between the cap member and the slidable plate so that this slidable plate is normally held against an end nut or shoulder secured on the extension part of the plug.

In manipulating tap the thumb piece is first pushed inwardly towards the tap body so as to clear the arm on the slidable plate from the path of the stop pin which is located on the cap member secured in the tap body or housing. After this stop pin has been cleared by this sliding movement of the carrier plate relatively to the extension of the plug member, the operating thumb piece can be turned and will then turn the plate member and with it the plug extension, so as to operate the plug relatively to the ports communicating with its bore in the tap body in the ordinary way. The gas supply may then be turned on to any extent desired up to the full open position. To reduce or turn off the supply the operating member may be turned back in the usual way, but cannot be turned back beyond a certain predetermined position, which preferably corresponds to a simmering condition of the burner as described above.

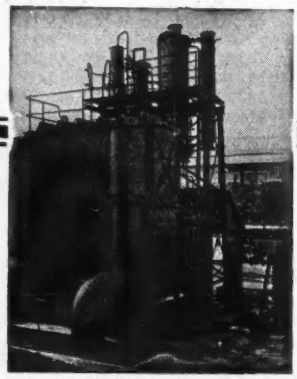
To cut off the supply the two operations are again necessary.

The Annual General Meeting of the Midland Junior Gas Association will be held at the Chamber of Commerce Buildings, New Street, Birmingham, on April 29 at 4.15 p.m. The new President, Mr. G. E. Stevenson, of Long Eaton, will give his Address.

Dividends

Oriental Gas Company, Ltd.—An interim dividend of 3½% less income-tax, on account of the year ending on June 30 next. It will be payable on May 31.

South-Western Gas and Water Corporation, Ltd.—Final dividend of 3% (actual), less income-tax, for the year ended Dec. 31, 1942, making total dividend of 5% for that year.



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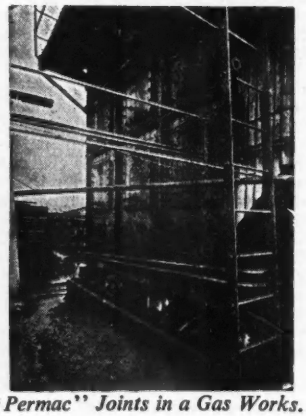

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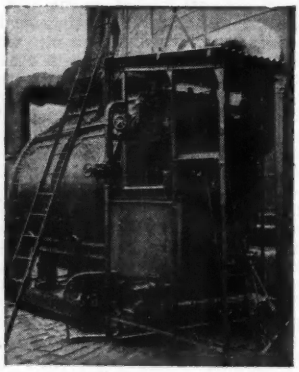

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Products Prices—Stocks and Shares

The London Market April 19.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

The Provinces April 19.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Naphtha and Xylol controlled by the Coal Tar, Naphtha, and Xylol Order, 1942, dated Dec. 7, 1942, and operative from Dec. 21. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5½d.; timber preservation and other purposes 4¾d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland April 17.

Prices continue steady. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6½d. to 7d.; low gravity, 7½d. to 7¾d.; neutral oil, 6d. to 6½d.; hydrogenation oil, 5⅞d. per gallon; all *ex* Works in bulk. Refined cresylic acid finds a ready sale at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha, 6½d. to 7d. per gallon. Solvent naphtha: Basic prices delivered in bulk, 90/160 grade 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine, 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

The Budget was well received on the Stock Exchange and the general tone of markets remained firm throughout the week. Industrial shares were favourably influenced, though British Funds were inclined to ease a little.

Business in gas stocks and shares was also fairly active and prices were well maintained. The few movements were all in an upward direction, the chief features being a rise of 11 points in Portsmouth consolidated to 120½, the stock changing hands at 121, and the gain of 9 in Croydon maximum dividend to 102½. It will also be noticed that in the Supplementary List East Surrey 5½% Preference "A" closed 10 points higher at 107½—the last transaction in this stock was at 98 in August last year. Another satisfactory feature was the strength of the two companies operating in India—*viz.*, Bombay which gained 1s. and Oriental with a rise of 9 points.

Except for the stock of the three Metropolitan companies, there is still very little ordinary stock available, but the lists of preference and debenture stocks on offer cover a fairly wide range, and although some of the amounts are small the yields obtainable are attractive.

The following price changes occurred during the week:

OFFICIAL LIST

Barnet Ord.	152—157	+2
Bombay	22/6—23/6	+1/-
British Ord.	100—105	+3
Croydon Sliding Scale	121—126	+1
Ditto max. Div.	100—105	+9
Mid-Southern 4 p.c. Pref.	90—95	+3
Oriental	102—107	+5
Portsmouth Cons.	118—123	+11

SUPPLEMENTARY LIST

Croydon 4 p.c. Deb.	100—105	+2
East Surrey 5½ p.c. Pref. "A"	105—110	+10
Tunbridge Wells Sliding Scale (x.d.)	118—123	Apr. 22

PROVINCIAL EXCHANGE

Newcastle 4 p.c. Pref.	95—96	+1

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